September 14, 2012

Arlene A. Juracek
Acting Director, Illinois Power Agency

Dear Director Juracek,

I greatly appreciate this opportunity to comment on the Illinois Power Agency's ("IPA") Draft Electricity Procurement Plan ("the Plan"). Over the past three years, C3[1] has worked with the Citizens Utility Board ("CUB") to enable thousands of Commonwealth Edison ("ComEd") customers to reduce their energy consumption, save money on their electric bills, and earn reward points by saving energy.

During our pilot program, C3 has:

- Engaged nearly 115,000 ComEd customers via direct marketing and engaged more than 22,000 customers who signed up online for the CUB Energy Saver web portal.[2]
- Saved, on average, greater than 5.8% of energy use per online customer vs. a control group as determined by Integral Analytics and Stanford University Professor Matthew Harding.
- Improved customers' satisfaction with their utility by an average of 10.6% (reported by Harding).

These comments pertain to the IPA's plan for the procurement of additional energy efficiency programs. The inclusion of the CUB Energy Saver program in the Plan would generate benefits for ratepayers that significantly outweigh the costs. C3's comments demonstrate the following:

- CUB Energy Saver participants take both "conservation actions" and "technology actions."
- On average across the energy savings generated by conservation actions and technology actions, customer engagement program savings have a lifetime of 3.8 years.
- Updating Total Resource Cost ("TRC") test calculations to use a measure life of 3.8 years for customer engagement programs will improve the accuracy of cost-effectiveness estimates and provide Illinois ratepayers with the economic and societal benefits resulting from cost-effective energy efficiency programs.

These comments include suggested language to modify the Plan by providing guidance to utilities on accounting for the lifetime savings generated by customer engagement programs.

I am available to answer any questions you may have. Supporting data are included in Appendix A.

Sincerely,

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[1] C3 acquired Efficiency 2.0 on April 30, 2012. See www.c3energy.com for more information.
[2] Visit www.cubenergysaver.com.

Introduction

These comments pertain to the incremental energy efficiency programs included in Section 7.1 of the Plan, as well as the appendices prepared by Ameren Illinois Company ("Ameren") and ComEd. ComEd and Ameren are required to include an assessment of new or expanded cost-effective energy efficiency programs that are incremental to the Energy Efficiency Portfolio Standard ("EEPS") programs[3] in the annual load forecasts both utilities submit to the IPA.[4] The IPA must include "programs and measures it determines are cost-effective" in the annual Plan, and the Illinois Commerce Commission ("Commission") must approve the measures in the plan "if the Commission determines they fully capture the potential for all achievable cost-effective savings."[5]

The utilities must each "conduct an annual solicitation process for purposes of requesting proposals from third-party vendors, the results of which shall be provided to the [Illinois Power] Agency as part of the assessment, including documentation of all bids received."[6] The statutory cost-effectiveness requirement for the additional energy efficiency programs and measures is the Total Resource Cost ("TRC") test, which is the same analysis used to determine the cost-effectiveness of the EEPS programs.[7] As defined by the Illinois Power Agency Act ("IPA Act"), if an energy efficiency investment meets the TRC, it means the benefit-cost ratio is greater than one. The benefit-cost ratio is "the ratio of the net present value of the total benefits of the program to the net present value of the total costs as calculated over the lifetime of the measures."[8]

On March 15, 2012, Efficiency 2.0 (now C3) submitted a response to Ameren's Request for Proposal for a Third-Party Efficiency Program. On March 30, 2012, Efficiency 2.0 (now C3) submitted a response to ComEd's Request for Proposal for a Third-Party Efficiency Program. As required by law, both Ameren and ComEd assessed energy efficiency program cost effectiveness using the TRC test.[9] Although the cost-effectiveness calculations are confidential, it is C3's understanding that Ameren and ComEd each assumed a measure life of only one year for the totality of energy savings in C3's program proposals.[10]

However, data from the CUB Energy Saver program demonstrate that a measure life of greater than one year is appropriate for customer engagement programs such as the one in C3's proposal. On average, across savings generated by both the conservation actions and technology actions taken by program participants, the lifetime of customer engagement program savings is 3.8 years (see Appendix A). Analyses of all customer engagement programs submitted through the third-party RFP process used by both utilities should be redone using a measure lifetime of 3.8 years, and any such programs that are

[3] Required by 220 ILCS 5/8-103(b).
[4] 220 ILCS 5/16-111.5B(a).
[5] *Id.*
[6] *Id*.
[7] 220 ILCS 5/8-103(a).
[8] 20 ILCS 3855/1-10.
[9] *Id*.
[10] In the Plan, Appendix I (Ameren's load forecast) indicates that "multiple similar programs were proposed by third party vendors" (p. 33) for an expanded residential program described as "Behavioral Modification." Yet, according to Table 1 of Ameren's Appendix I, no "Behavioral Modification" proposal passed a TRC test. C3 believes that our response to the Ameren Third-Party RFP was categorized within the "Behavioral Modification" item of Table 1. Similarly, in Appendix II (ComEd's load forecast), the listing of programs in Appendix C-2, does not reflect C3's response to the ComEd Third-Party RFP, which C3 takes as an indication that our program did not pass the TRC test implemented by ComEd.

cost-effective under this analysis should be included in the IPA Plan submitted to the Commission for approval.

Overview of the C3 Residential™ Customer Engagement Program[11]

C3's programs are consistently generating savings of more than 5% per online participant. In evaluations of C3's CUB Energy Saver program in Illinois, two separate studies found savings of 5.82% (Integral Analytics) and 6.01% (Harding & McNamara, 2011).[12] Similarly, Opinion Dynamics Corp. ("ODC") and Navigant found savings of 5.5%-5.7% per online participant for C3's program in Western Massachusetts during 2011.[13]

The CUB Energy Saver web portal provides users with personalized energy saving recommendations based on geography, past consumption, household fuel types, income level, and other demographic and psychographic criteria. This program has been successful at motivating customers to install efficient technologies as well as reduce energy consumption through behavior change.

When customers select an energy-saving recommendation they receive a highly accurate estimate of how much money and energy they can save by taking that action. C3 relies on actual bill data to monitor customers' reduction in usage. Customers receive additional motivation to take energy-saving actions through C3's reward points program. For each month that a customer saves energy, C3 grants that customer reward points that can be redeemed for discounts at popular retailers.

The C3 Residential™ Customer Engagement Program Generates Persistent Savings and a Measure Life of 3.8 Years Is Conservative

As described above, C3 generates energy savings using personalized recommendations and rewards. Savings are evaluated using experimental and quasi-experimental design to compare the change in energy use of a "treatment group" (participants) to the change in energy use of a control group.[14] Thus, C3's program is "measure-agnostic" in the sense that whole-house energy savings are achieved across a wide spectrum of energy-saving actions.

Further scrutiny of the savings generated by C3's program demonstrates that customers are taking both "conservation actions" and "technology actions" to save energy. There are a variety of methods that can be used to identify the actions customers are taking to achieve savings. One method that C3 has employed is a review of real-time survey data collected on the CUB Energy Saver web portal.[15] Other types of surveys by an independent evaluator (pre vs. post, control vs. treatment, etc.) represent another method for identifying the actions customers are taking to save energy. For example, in the

[11] The term "customer engagement program" can be used synonymously with the term "behavior modification program" that appears in the IPA Plan.
[12] See: http://smartgridcc.org/wp-content/uploads/2012/01/Stanford_CES-Evaluation_Draft.pdf.
[13] Massachusetts Three Year Cross-Cutting Behavioral Program Evaluation Integrated Report," Opinion Dynamics Corporation & Navigant Consulting, July 2012, Prepared for: Massachusetts Energy Efficiency Advisory Council & Behavioral Research Team.
[14] For more information on recommended evaluation protocols for the use of billing analysis to verify savings from energy efficiency programs, see: "Evaluation, Measurement, and Verification (EM&V) of Residential Behavior-Based Energy Efficiency Programs: Issues and Recommendations," U.S. Department of Energy, State & Local Energy Efficiency Action Network, and Lawrence Berkeley National Laboratory, May 2012, available at: http://behavioranalytics.lbl.gov.
[15] The data are self-reported by customers using the web portal to identify the energy-saving actions they are taking. See Appendix A.

analysis of C3's program in Western Massachusetts, ODC/Navigant found statistically significant increases in several technology measures by program participants (including a 2.6x increase in recycling a second refrigerator and a 6.3x increase in purchase or installation of a programmable thermostat, among others).[16]

As another example, in a recent study of the energy efficiency potential for the state of California, Navigant reported an estimate of the breakdown of savings between conservation actions and technology actions. According to Navigant, "67% of impacts are usage [i.e., conservation]-based and 33% are equipment [i.e., technology]-based" (p. 47).[17]

Energy savings from a technology action are persistent: once the action is taken, energy savings continue without requiring further customer action (e.g., installing insulation saves energy until the insulation deteriorates). The evidence reported above from C3's data indicates a lifetime of greater than one year for savings generated by the CUB Energy Saver program. Indeed, cross-referencing the technology actions reported by program participants with state technical reference manuals ("TRMs")[18] indicates an average estimated useful life ("EUL") of nearly 10 years for the technology-based savings.

Just as energy savings are attributed over an estimated useful life for efficient technologies installed as part of a hardware incentive/rebate program, the same treatment should apply for technology-based savings from customer engagement programs. A proper measure life for customer engagement programs must account for the lifetime of both conservation-based and technology-based savings. If, conservatively, 33% of savings come from technology (consistent with the Navigant study in California), then a proper measure life for customer engagement programs is 3.8 years. If the proportion of savings that come from technology is higher, as C3 data suggest (see Appendix A), then the proper measure life for customer engagement programs is longer than 3.8 years.

Proposed Modifications to the Plan

C3 proposes that the following paragraph be appended to Section 7.1 of the Plan.

> The IPA notes that a TRC test should compare costs and benefits "over the lifetime of the measures" (see 20 ILCS 3855/1-10 *supra* note 32 [of the IPA Plan]). In the case of a customer engagement program, it is appropriate to consider the expected actions that program participants will take to save energy. Technology-based savings generated by a customer engagement program may be counted over the lifetime of the technology. A measure life of 3.8 years should be used in the TRC tests that assess customer engagement programs. In order to verify the persistence of savings from a customer engagement program, independent evaluators should seek to develop two sets of data: (1) identification of the energy-saving actions customers are taking as a result of the program; and (2) identification of the proportion of those actions that are technology-based.

[16] Massachusetts Three Year Cross-Cutting Behavioral Program Evaluation Integrated Report," Opinion Dynamics Corporation & Navigant Consulting, July 2012, Prepared for: Massachusetts Energy Efficiency Advisory Council & Behavioral Research Team (see Tables 25-26 on pp. 73-74).

[17] http://www.cpuc.ca.gov/NR/rdonlyres/5A1B455F-CC46-4B8D-A1AF-34FAAF93095A/0/2011IOUServiceTerritoryEEPotentialStudyFinalReport.pdf.

[18] Appendix A contains a compilation of the data reported in a selection of TRMs regarding savings associated with actions undertaken by CUB Energy Saver program participants.

Additionally, C3 recommends that the IPA remove an extraneous cost-effectiveness requirement from the Plan. The IPA recommends that the Commission take "the favorable UCT results into account and approve the programs" ComEd and Ameren submitted.[19] The Illinois Statewide Smart Grid Collaborative Report ("ISSGC") defines the Program Administrator or Utility Cost Test (UCT) as a test that "measures net program costs, like a TRC test, but excludes participant costs. Its concern is determining if revenue requirements are reduced."[20] The sole statutory criterion upon which incremental energy efficiency is to be assessed is the TRC test.[21]

Conclusion

C3 greatly appreciates this opportunity to comment on the IPA's procurement plan. Adoption of the modifications proposed herein will ensure that customer engagement programs are treated in the same way as other energy efficiency programs when conducting cost-benefit tests. The proposed modifications will lead to significant benefits for Illinois ratepayers by enabling utilities to implement cost-effective customer engagement programs to achieve significant energy savings.

[19] Plan at 59 and 60.
[20] The Illinois Statewide Smart Grid Collaborative Report at 234, available at: http://www.ilgridplan.org/SharedDocuments/ISSGC Collaborative Report.pdf.
[21] 220 ILCS 5/16-111.5B (b).

APPENDIX A

Backup Data Used to Determine Proper Measure Life for Customer Engagement Programs

CUB ENERGY SAVER DATA					IL Draft TRM[22]		Michigan MEMD 2012		MA TRM 2011	
Action Name	**Share of all actions**	**Share of all savings**	**Share of tech. actions**	**Share of tech. savings**	**EUL (yrs)**	**TRM Page**	**EUL (yrs)**	**Excel Row**	**EUL (yrs)**	**TRM Page**
Cfl	4.7%	18.8%	16.0%	38.5%	6.8	445	9	4	7	24
smartstrip	2.3%	3.4%	8.0%	6.9%	4	339	5	54	5	48
air_sealing	1.8%	4.4%	6.1%	8.9%	15	492	10	Assumption	15	132
programmable_thermostat	1.6%	0.3%	5.6%	0.7%	5	392	5	Assumption	10	132
dryer_replace	1.6%	7.0%	5.3%	14.3%	14	302	14	72	10	Assumption
refrigerator	1.4%	1.4%	4.9%	2.9%	12	324	12	55	12	52
ceiling_fan_install	1.1%	2.8%	3.6%	5.7%	10	Assumption	10	14	10	Assumption
leaky_faucet	1.0%	0.1%	3.6%	0.1%	10	Assumption	10	Assumption	10	Assumption
buy_efficient_tv	1.0%	0.3%	3.3%	0.7%	5	Assumption	6	80	6	50
replace_desktop	1.0%	1.1%	3.3%	2.2%	5	Assumption	4	107	4	42
shower_head	1.0%	0.6%	3.3%	1.3%	10	419	12	24	7	121
led_holiday	0.9%	0.3%	3.0%	0.5%	5	Assumption	10	13	20	36
water_heater_temp	0.9%	0.2%	3.0%	0.5%	2	427	1	Assumption	1	Assumption
kitchen_aerator	0.9%	0.1%	3.0%	0.3%	9	411	12	26	7	121
led_nightlight	0.8%	0.2%	2.8%	0.4%	5	Assumption	12	9	20	36
double_pane_window	0.7%	0.4%	2.5%	0.9%	10	Assumption	10	Assumption	25	132
bathroom_aerator	0.7%	0.0%	2.2%	0.0%	9	411	12	26	7	121
clothes_washer	0.6%	0.3%	2.1%	0.7%	14	301	14	45	10	Assumption
furnace	0.6%	0.5%	2.1%	1.1%	20	367	10	33	18	132
central_ac_replace	0.5%	1.2%	1.8%	2.5%	18	347	10	Assumption	18	67
insulate_wall	0.5%	0.1%	1.7%	0.2%	25	516	10	Assumption	20	111
ceiling_fan_replace	0.5%	0.2%	1.7%	0.5%	10	Assumption	10	14	10	Assumption
insulate_roof	0.5%	0.2%	1.7%	0.5%	25	516	10	Assumption	20	111
storage_water_heater	0.4%	0.7%	1.5%	1.5%	10	Assumption	15	15	10	Assumption
insulate_water_pipe	0.4%	0.0%	1.5%	0.0%	15	397	10	Assumption	10	Assumption
dish_washer	0.4%	0.1%	1.5%	0.3%	13	313	11	68	10	125
water_heater_blanket	0.2%	0.0%	0.8%	0.0%	5	429	6	22	7	121
insulate_duct	0.2%	0.0%	0.7%	0.0%	20	354	10	Assumption	20	132
paint_roof_white	0.2%	0.4%	0.7%	0.9%	10	Assumption	10	Assumption	10	Assumption
ditch_extra_fridge	0.2%	1.1%	0.7%	2.3%	8	332	8	62	5	62

[22] C3 understands that values contained in the Illinois Draft TRM have not been approved by the Commission, and we note that a 3.8 year measure life for customer engagement programs is supported by the other state TRMs that we have analyzed as well.

window_ac_replace	0.2%	0.3%	0.7%	0.5%	4	336	12	32	12	102
induction_stovetop	0.1%	-0.1%	0.4%	-0.1%	10	Assumption	10	Assumption	10	Assumption
solar_panel	0.1%	1.8%	0.3%	3.8%	10	Assumption	10	Assumption	10	Assumption
halogen_oven	0.1%	0.0%	0.3%	0.1%	10	Assumption	10	Assumption	10	Assumption
solar_water_heater	0.1%	0.2%	0.2%	0.4%	10	Assumption	20	74	10	Assumption
Technology %:	29%									
Technology %:		49%								
	Simple Average (years):				12.1		9.0		9.0	
	Action-Weighted Average (years):				9.5		9.3		10.3	
	Savings-Weighted Average (years):				9.5		9.8		9.2	
	Navigant Conservation %:				67%		67%		67%	
	Navigant Technology %:				33%		33%		33%	
	Blended Average Measure Life (years):				**3.8**		3.9		3.7	